# APPENDIX AE - ENVIRONMENTAL FLIGHT

## AE.1 - PURPOSE -

To aid the individual aviator(s) and flight crew member(s) in completing their mission under varying environmental conditions.

## AE.2 - SCOPE -

This SOP is applicable to all personnel providing aviation support to this Facility and units supported by this Facility.

## AE.3 - TASK CONTENT -

1. Task Number and Title - Each task is identified by a number and a title which is assigned a 3000-series number.
2. Conditions - The conditions specify the situation in which the task is to be performed. They describe the important aspects of the performances environment.
3. Standards - The standards describe the minimum degree of proficiency of standard of performance in which the task must be accomplished.
4. Description - The description explains how the task should be accomplished to meet the standard(s).
5. Night Considerations -Where applicable, night considerations are included.
6. References - Listed references for each task are sources of information about that particular task.

## AE.4 - TASK CONSIDERATIONS-

1. References to the IP in the task conditions include the SP.
2. When UT, IP, or IE is cited as a condition, a UT, and IP, or an IE will be at one set of the flight controls.
3. Unless otherwise specified, the conditions all in-flight training and evaluations will be conducted under VMC.
4. Airspeeds will be within plus or minus 10 KIAS as identified by the instructor during the maneuver.
5. Tasks 3001-3018 are generic and each individual IP will adopt the tasks per specific aircraft for RW. FW tasks begin with task 3040 and will be applicable when fixed-wing aircraft are again assigned to this Facility. Flight tasks will not be attempted if performance planning or a hover OGE check indicates that OGE power is not available.

The following is a list of Environmental Tasks:

1. 3001, Perform Bambi Bucket Operations
2. 3002, Perform or Describe Snow/Cold Weather Operations
3. 3003, Desert Operations and Hot Weather Operations
4. 3004, Describe Turbulence/Thunderstorms
5. 3005, Dust, Sand, Snow Landing
6. 3006, Perform or Describe Mountain Operations
7. 3007, Prepare a PPC for Mountain Flying Operations
8. 3008, Describe the Meteorological Conditions Peculiar to Mountain Regions.
9. 3009, Describe/Perform Route Selection and Enroute Flight Techniques
10. 3010, Perform Mountain Take-Off
11. 3011, Perform Aircraft Performance Verification
12. 3012, Perform Go-Around
13. 3013, Perform Mountain Approach and Landing
14. 3014, Perform Mountain Landing Zone Reconnaissance
15. 3015, Perform Wind Drift Circle
16. 3016, Describe or Perform In Mountain Environment Emergency Procedures
17. 3017, Over Water Operations
18. 3018, Perform Electronically Aided Navigation
19. 3040, Mountain/High Altitude Operations
20. 3041, Over water Operations (extended)

| **TASK 3001 -** Perform Bambi Bucket Operations | |
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| **CONDITIONS** | In a cargo/utility/observation helicopter, under day VMC, with an operational Bambi Bucket. Required briefings and checks completed and aircraft cleared. |
| **STANDARDS** | A. Fill Bucket<br>1. Submerge bucket in water source with no forward ground speed<br>2. Maintain vertical ascent heading +/- 10 degrees<br>3. Maintain altitude of load 5 feet AWL, +/- 1 foot<br>4. Do not allow drift to exceed 5 feet<br>B. Take-Off (Below Obstacles)<br>1. Maintain take-off heading +/- 10 degrees<br>2. Maintain ground track alignment w/take-off direction<br>3. Maintain power as required to clear obstacles<br>C. Take-Off (Above Obstacles)<br>1. Maintain aircraft in trim<br>2. Maintain airspeed +- KIAS<br>3. Maintain rate of climb +/- 100 feet<br>D. Enroute<br>1. Maintain aircraft in trim<br>2. Maintain airspeed 10 KIAS<br>3. Maintain obstacle clearance (minimum of 50 feet AHO)<br>E. Approach and Water Release<br>1. Maintain a constant approach angle to ensure the bucket clears obstacles<br>2. Maintain ground track alignment with the selected approach path<br>3. Maintain airspeed at or above ETL<br>4. Maintain heading +/- 10 degrees<br>5. Release water on desired target using proper techniques |
| **DESCRIPTION** | A. Filling bucket and hover.<br>Place cargo hook release switch in the ARM position per each aircraft operations movement. Submerge bucket in water source with zero ground speed. Apply cyclic, collective and pedals are required to remain vertically clear of and centered over the bucket as it fills. Slowly apply collective until all slack is taken out of cables. Make necessary corrections with the cyclic to remain centered over the bucket. Maintain heading with the pedals. Apply additional collective to raise the filled bucket to 5 feet AWL. Monitor aircraft instruments to ensure aircraft limitations are not exceeded.<br>B. Take-off.<br>Smoothly apply forward cyclic while increasing collective pitch to begin a coordinated acceleration and climb. Adjust pedals as necessary to maintain desired heading. Adjust cyclic and collective as necessary to attain a constant angle of climb that will permit obstacle clearance. Continue the climb out at the altitude and power until obstacles are cleared. When above obstacles, adjust altitude and power as required to establish the desired rate of climb and airspeed. Make small control movements to prevent bucket |

| **TASK 3001 -** Perform Bambi Bucket Operations | |
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| | oscillation.<br>C. Enroute.<br>Maintain desired altitude with the collective and desired flight path and airspeed with the cyclic. Maintain aircraft in trim with the pedals. Make smooth control application to prevent buck oscillation. If lateral bucket oscillation occurs, reduce airspeed. If a fore-and-aft oscillation occurs, begin a shallow bank while reducing airspeed.<br>D. Approach and water release.<br>When the approach angle is intercepted, decrease the collective to establish the descent. Maintain entry assigned until apparent ground speed and rate of closure appear to be increasing. Progressively decrease the rate of descent and forward airspeed until desired ground speed and altitude is attained above the intended release point. A deceleration below ETL. Release water on desired target using either the spot drop or high dispersion method. With empty bucket ensure water release valve is opened above 40 KIAS for return flight to water source. |
| **NOTES** | Note 1: Before the mission, the PC will ensure that all aircrew members are familiar with procedures.<br>Note 2: Hover OGE power is required for Bambi Bucket operations when water source is in a confined area.<br>Note 3: Avoid flight over populated areas. |
| **REFERENCES** | FM 3-04.203 (1-203)<br>FM 55-450-1<br>TC 1-201<br>Aircraft Operator's Manual<br>California State Special Mission SOP |

| **TASK 3002 -** Perform or Describe Snow/Cold Weather Operations | |
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| **CONDITIONS** | In a cargo/utility/observation/attack helicopter, VMC, or in a classroom with an IP/SP. |
| **STANDARDS** | A. Be familiar with the applicable information in the Operator's Manual for cold weather operations under the following conditions: 0 degree Celsius and below for UH-1.<br>B. Ensure barrier filters (UH-1) are removed prior to flight.<br>C. Ensure, if feasible, cold weather survival kits or sleeping bags are available to personnel on extended flights over remote areas.<br>D. Be knowledgeable and demonstrate proficiency in snow operations for the following technique in improved/unimproved areas IAW FM 1-200, FM 3-04.400 (1-400) and the Operator's Manual.<br>1. Start-up and shutdown<br>2. Hover above and below translational lift, helicopter<br>3. Take-off and approaches in both improved and unimproved areas<br>4. Natural and man made visual cues for depth perception<br>5. External load hook-up, take-off, and landings, helicopter<br>6. Terrain flight considerations over snow covered terrain, helicopter |
| **DESCRIPTION** | Comply with the requirements above. |
| **NOTES** | IP/SPs will use this task to teach/brief/evaluate an aviator on snow operations peculiar to his/her aircraft. IPs may simulate snow conditions to evaluate proficiency in this task. |
| **REFERENCES** | FM 3-04.202 (1-202)<br>FM 3-04.230 (1-230)<br>FM 3-04.400 (1-400) |

| **TASK 3003 -** Desert Operations and Hot Weather Operations | |
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| **CONDITIONS** | In your unit assigned helicopter, with an IP/SP, describe or perform desert/hot weather operations. |
| **STANDARDS** | A. The desert is a dry, barren, and sandy region of environmental extremes that has violent and unpredictable changes in the weather and is said to be the most severe environment in which an aviator must operate.<br>1. Dust, sand, and high temperatures encountered during desert operation can sharply reduce the operational life of the aircraft and its equipment, not to mention its effects on the performance capabilities.<br>2. The abrasive effect on turbine blades and the destructive effect of heat on the instruments will increase the maintenance workload if the preventive measures are not followed.<br>3. In flight, dust and sand hazards will be hard to escape. Dust clouds have been known to exceed 10,000 feet. During hot weather operations, the difficulties encountered are high engine temperature during starts, and sluggish aircraft performance.<br>4. In addition, in areas of high humidity, electrical equipment is subjected to corrosion fungi, and moisture absorption.<br>5. Be familiar with above applicable information and correctly describe appropriate action IAW references. |
| **DESCRIPTION** | A. Preparation for flight. Position aircraft so that rotor wash does not damage other aircraft. Check that landing gear struts are free of sand and dust. Check interior for accumulation of sand and dust. Open cargo door(s) and vent windows for ventilation of the aircraft.<br>B. Engine starting. Use normal procedures but be aware that higher ambient temperatures may cause higher than normal engine temperatures. Be prepared to abort the start before temperature limitations are exceeded.<br>C. Warm-up and round tests. Use normal procedures.<br>D. Hovering. When practical avoid hovering over sandy terrain to minimize rotor damage and engine deterioration.<br>E. Take-off. Assume that conditions for brownout may exist. Minimize obstruction by accelerating above ETL as quickly as practicable or using altitude over airspeed technique. Increased crew coordination and scanning is required. "WARNING," do not attempt take-off in a sandstorm or dust storm.<br>F. During flight. Use normal procedures but avoid flying through sandstorms or dust storms when possible to minimize damage to internal engine parts and excessive bearing wear.<br>G. Landing. An area should be identified that has minimal loose dirt/sand, if possible. Best landing procedure is a shallow approach angle and touchdown with slight forward movement. If disorientation occurs at any time during the approach, apply power and execute a go-around. If go-around is not feasible, attempt to maneuver the aircraft forward and down to limit the possibility of touch down with sideward or rearward movement.<br>H. Before leaving aircraft. Use extreme care to prevent sand/dust from entering fuel and oil system during servicing aircraft. Install all protective covers. |
| **NOTES** | NONE |
| **REFERENCES** | AR 95-1<br>FC 3-04.202 (1-202)<br>FM 3-04.203 (1-203)<br>FM 3-04.230 (1-230)<br>Operator's Manual |

| **TASK 3004 -** Describe Turbulence/Thunderstorms | |
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| **CONDITIONS** | In a cargo/utility/observation/attack helicopter with an IP or an IE, a 2B24/38/40, or orally in a classroom environment, given a specific weather condition. |
| **STANDARDS** | Without error, describe the weather condition identified by the instructor. |
| **DESCRIPTION** | Describe the appropriate emergency procedure as outlined in the Aircraft Operator's Manual. Request appropriate emergency assistance as described in the Flight Information Handbook (FIH).<br><br>A. Definition. Random fluctuations of airflow, which are instantaneous and irregular.<br>1. Causes.<br><br>a. Thermal. Local convective currents due to surface heating or unstable lapse rate. In moist air there will be cumuliform cloud formations. Smooth air will be encountered above these clouds.<br>b. Mechanical. Wind flowing over uneven terrain, degree of turbulence depends on wind speed, type of terrain, and stability of the air.<br>c. Frontal. Local lifting of warm air by cold air masses, or abrupt wind shear associated with cold fronts. Vertical currents in the warm air are strongest when the warm air is moist.<br>d. Large scale wind shear. Marked gradient in wind speed and/or direction due to general vibrations in the temperature and pressure fields aloft.<br><br>B. Stability of the Air.<br><br>1. Seems to be the most important factor in determining the strength of turbulence. It is the atmospheric resistance to vertical motion.<br>2. The amount of moisture in the air determines its temperature lapse rate and classifications of stability, which are:<br><br>a. Absolute stability. The actual lapse rate is less than the moist adiabatic lapse rate (1.1 to 2.8 Celsius per 1000'). When a parcel of air is lifted, it becomes cooler than the surrounding air and sinks back to its original position.<br>b. Neutral stability. Has the same temperature as surrounding air, therefore has no tendency to rise or descend.<br>c. Absolute instability. Lapse rate of a layer of air is greater the dry adiabatic lapse rate (3 degrees Celsius per 1000'). A parcel of air even slightly lifted will at once be warmer than its surrounding air and will rise rapidly.<br>d. Conditional stability. The actual lapse rate of an air mass lies between the dry and moist adiabatic lapse rate. If the air is saturated it will be unstable, if unsaturated it will be stable. Standard lapse rate is 2 degrees Celsius per 1000'. It is used as a basis for calibrating aircraft altimeters and has no connection with determining the stability of the air.<br><br>C. Degrees of turbulence.<br><br>1. Light. A condition of turbulence existing over extensive areas and altitudes. More intense in this class is found in cumuliform clouds. Also found at low levels over rough terrain with surface winds less than 25 knots.<br>2. Moderate. Related to the mountain wave when winds are perpendicular to a ridgeline and are 20-50 knots or more from surface to |

| **TASK 3004 -** Describe Turbulence/Thunderstorms | |
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| | 10,000 feet, as much as 300 miles leeward of the mountains. It is found in cumuliform clouds, usually in thick or towering cumulous and in strong surface winds when the winds exceed 25 knots. It is associated with an upper trough, cloud low, or front aloft where the vertical wind shear exceeds 6 knots per 1000 feet or the horizontal wind shear exceeds 40 knots per 150 miles. Finally, it is found in unstable atmospheres, frequently near the surface when moisture is insufficient for the formation of thunderstorms or towering cumulus.<br>3. Severe turbulence. Related to the mountain wave when the winds are perpendicular to the ridgeline at 50 knots or more, severe turbulence will be found up to 150 miles leeward; or with winds 20 to 50 knots, severe turbulence may be found up to 50 miles leeward. Severe turbulence is usually found in thunderstorms and more infrequently in towering cumulus clouds.<br>4. Extreme turbulence. May be found with mountain wave activity at low levels to the leeward side of ridgelines when the wind is 50 knots or greater, or infrequently at low levels with winds 20 to 50 knots. It may be encountered in thunderstorms, more frequently in growing cells.<br><br>D. Reporting Criteria.<br><br>1. Light. Momentarily causes slight, rapid, and somewhat rhythmic bumpiness without appreciable changes in altitude or attitude.<br>2. Moderate. Greater in intensity than light. Changes in altitude or attitude occur, but the aircraft remains in control at all times. Variations in airspeed occurs.<br>3. Severe. There are large, abrupt changes in altitude or attitude and large variations in airspeed. The aircraft may be momentarily out of control. |
| **NOTES** | NONE |
| **REFERENCES** | FM 1-5 FIH Aircraft Operator's Manual<br>FM 1-240 Operator's and Crew Member's Checklist |

| **TASK 3005 -** Task 3005: Dust/Sand/Snow Landing | |
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| **CONDITIONS** | In a cargo/utility/observation/attack helicopter before landing check completed (see note below). |
| **STANDARDS** | A. Select a suitable landing area<br>B. Establish the proper altitude to clear obstacles on final approach, and maintain +/- 50 feet<br>C. Establish entry airspeed +/- 10 KIAS<br>D. Maintain the proper approach angle to clear obstacles<br>E. Maintain ground track aligned with selected approach path without deviation.<br>F. Maintain appropriate rate of closure<br>G. Make a smooth and controlled termination at the intended approach point |
| **DESCRIPTION** | A. The best procedure to minimize blowing dust, sand, and snow is a running landing. If the terrain does not permit a running landing, an approach to touchdown should be made, attempting to keep the helicopter in front of the dust/sand/snow cloud until touchdown.<br><br>**CAUTION**<br><br>All doors and windows should be kept closed during landings and take-offs to prevent dust, sand, and snow from entering the cockpit and cargo area. Hovering, low-altitude and low speed flight modes should be avoided whenever possible.<br><br>B. Dust, sand, and snow. Before initiating the approach, become familiar with the touchdown area. If approaching an improved site, some forward speed on touchdown may be desirable. If approaching a tactical site, select a touchdown area that is level and free of obstructions, and dissipate forward speed prior to touchdown. If no obstacles are along the approach path, a shallow approach is recommended. The primary difference in this approach is in the last 50 feet. Instead of making the normal deceleration below ETL airspeed, maintain a slightly higher speed until just prior to touchdown. This procedure allows you to keep the helicopter in front of the snow, dust, or sand cloud until touchdown. Ensure windows and doors are closed. Never terminate the IGE hover, as disorientation can occur in the snow, dust, and cloud. If an approach is required to land in a confined area, or with an external load, terminate the approach out of ground effect above the touchdown point, and slowly hover vertically downward, keeping visual reference with the ground.<br><br>C. Night or NVG considerations. Night approaches to the snow normally are made to a reference point on the ground (tactical lighting, or runway lights). Plan your approach to land short of the touchdown point. This procedure will ensure that you will not overshoot and have to decelerate rapidly in a snow cloud. If the landing light or searchlight is used during the approach, position this light so the beam is beneath the aircraft. |
| **NOTES** | Prior to performing snow landing, proficiency must be demonstrated to an IP/SP. |
| **REFERENCES** | FM 3-04.202 (1-202) |

| **TASK 3006 -** Perform or Describe Mountain Operations | |
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| **CONDITIONS** | In a cargo/utility/observation/attack helicopter, VMC and in a classroom with an IP/SP. |
| **STANDARDS** | A. Be knowledgeable in:<br>1. Mountain operations as outlined in FM 1-202, Environmental Flight.<br>2. Mountain operations for terrain flight as outlined in FM 1-202 if required on the Commander's Task List.<br>B. Correctly determine power requirements to safely accomplish the mission.<br>C. Correctly compute and state the pilot's actions for insufficient pedal control, UH-1 only.<br>Demonstrate proficiency in all phases of terrain flight operations to include take-offs and landings. Only required if on the Commander's Task List. |
| **DESCRIPTION** | Comply with the requirements above. |
| **NOTES** | IP/SPs will use this task to teach/brief/evaluate an aviator on Mountain Operations. |
| **REFERENCES** | FM 3-04.202 (1-202)<br>FM 3-04.400 (1-400) |

| **TASK 3007 -** Prepare a PPC for Mountain Flying Operations | |
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| **CONDITIONS** | Given a completed DD Form 365-4, an Operator's Manual, the mission, atmospheric conditions at take-off, enroute, and landing, and a blank PPC. |
| **STANDARDS** | Complete a PPC for mountain flying operations without error. |
| **DESCRIPTION** | A. Performance planning will be completed using the appropriate ATM and Operator's Manual.<br>B. The same PPC will suffice for consecutive take-offs and landing where load or environmental conditions have not increased significantly, per the appropriate ATM.<br>C. When engaged in mountain flying operations, depending on the mission, it is recommended that the reverse planning sequence be used. Pilots will include performance planning for different levels of flight, to include the highest, and then interpolate between levels using the DD Form 4887-R adapted for mountain flight. |
| **NOTES** | NONE |
| **REFERENCES** | Operator's Manual<br>ATM<br>FM 3-04.202 (1-202)<br>FM 3-04.203 (1-203) |

| **TASK 3008 -** Describe the Meteorological Conditions Peculiar to Mountain Regions | |
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| **CONDITIONS** | In a classroom or during flight in a mountainous environment. |
| **STANDARDS** | Accurately describe the meteorological conditions peculiar to mountain regions and, if appropriate, identify hazards to flight associated with specific mountain meteorological phenomenon. |
| **DESCRIPTION** | The pilot will demonstrate a thorough knowledge of:<br><br>A. Types of wind.<br>B. Mountain waves and rotor turbulence (vertical current, turbulence, wind gusts, altimeter error, icing, etc.).<br>C. Effects of density altitude and temperature on aircraft performance.<br>D. Hazards involved in snow operations.<br>E. Types of fog common in mountainous regions. |
| **NOTES** | NONE |
| **REFERENCES** | FM 3-04.230 (1-230)<br>Operator's Manual |

| **TASK 3009 -** Describe/Perform Route Selection and Enroute Flight Techniques | |
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| **CONDITIONS** | In a classroom or during flight in a mountain environment and given weather, winds, map and a completed PPC. |
| **STANDARDS** | A. Select a suitable route<br>B. Use correct enroute procedure IAW FM 3-04.202 (1-202) |
| **DESCRIPTION** | The pilot will demonstrate a thorough knowledge of:<br><br>A. Know the characteristics of wind, particularly the windfall over and around mountainous terrain (lines of demarcation, ridges, saddles, crowns, shoulders, cliffs, canyons, etc.) and resulting turbulence.<br>B. Route planning. By being aware of the basic principles of wind/terrain analysis, a pilot can select a route that will give a minimum of turbulence or downdrafts and maximum assistance from updrafts.<br>C. Valley flight. When flying through a valley or canyon, the pilot should sly to one side. This gives the most room for turning around and the turn will be toward lower ground. Usually the side with the wind flowing upslope is preferred; however, if turbulence is not a factor, use the opposite side of the valley. Turns should not use more than ½ the canyon width if possible. The unused canyon width is your safety reserve. The number one rule in canyon flying is to leave room to turn.<br>D. Terrain clearance. At all times a pilot should be in a position to fly downhill in the event terrain clearance becomes questionable.<br>E. Downdraft recovery. Increase power to maximum power available, adjust airspeed to maximum rate of climb airspeed, if possible, turn to a terrain feature that will cause an updraft situation. If unable to arrest descent, prepare to land into the wind or upslope as the situation dictates.<br><br>F. Ridge flying techniques.<br><br>1. Cross bridges at approximately a 45 degree angle as a precautionary measure in case the aircraft cannot make it over the ridge due to inadequate altitude or downdrafts. A lesser turn is required to head down slope again.<br>2. As a ridge is approached, take note of how much ground is visible. If you can see more ground on opposite side of the ridge, you will clear and conversely if you see less ground, you will not clear (cross reference map as necessary).<br><br>G. General Guidelines.<br><br>1. File a flight plan with specific route and destination, and follow the flight plan route.<br>2. Plan flight over roads or well known mountain passes if possible to facilitate rescue.<br>3. Check enroute weather emphasizing pireps and winds aloft.<br>4. Maintain sufficient altitude, if conditions permit, to glide to a reasonable safe area.<br>5. Know the wind and analyze the effect of terrain upon int. Comparing the flow of air to the flow of water will aid in visualizing air currents.<br>6. Realize the actual horizon is near the base of the mountains. Using the peaks as the horizon will cause the aircraft to be in a constant climb.<br>7. Know the performance of the aircraft. |

| **TASK 3009 -** Describe/Perform Route Selection and Enroute Flight Techniques | |
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| | 8. Give yourself adequate room and altitude when crossing mountain passes.<br>9. Approach ridges and passes at a 45 degree angle.<br>10. If you encounter a downdraft, do not be alarmed. Adjust controls for turbulence penetration and fly out towards lower terrain.<br>11. Avoid flight in the middle of canyons.<br>12. Avoid flight too close to abrupt changes in terrain due to turbulence, especially so in high wind conditions.<br>13. A one mile per hour wind blowing down slope is 88 feet per minute. A five mile per hour wind blowing down slope is 440 FPM, which can easily be more than the rate of climb of your aircraft.<br>14. Remember the basic rule. Always remain in position that will allow you to turn and fly downhill with no more than 90 degree change of direction. |
| **NOTES** | NONE |
| **REFERENCES** | Operator's Manual<br>FM 3-04.202 (1-202)<br>AIM Part I |

| **TASK 3010 -** Perform Mountain Take-Off | |
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| **CONDITIONS** | In a mountain environment, VMC, with hover power and before take-off checks completed, aircraft cleared. |
| **STANDARDS** | See appropriate ATM for normal take-off. Correctly select the appropriate ATM take-off (i.e. VMC, constant angle, level acceleration, airspeed over altitude, terrain, etc.) and maintain ATM take-off standards. |
| **DESCRIPTION** | See appropriate ATM and Operator's Manual. |
| **NOTES** | Where drop-offs are located along the take-off path the aircraft may be maneuvered down slope to gain airspeed.<br><br>Terrain beyond the immediate confined area may be more of an obstacle than those comprising the confined area both in terms of elevation and the presence of downdrafts.<br><br>Never use more than absolute minimum power necessary to complete the maneuver. |
| **REFERENCES** | Operator's Manual<br>FM 3-04.202 (1-202)<br>Aircrew Training Manual |

| **TASK 3011 -** Perform Aircraft Performance Verification | |
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| **CONDITIONS** | In a helicopter, VMC, completed PPC. |
| **STANDARDS** | A. Confirm PPC and hover power checks.<br>B. Perform in-flight power check over a safe area and at a safe altitude for autorotation.<br>C. Determine if aircraft is producing predicted power to complete the operation. |
| **DESCRIPTION** | A. Perform check as soon as possible after take-off and prior to reaching the landing area. Maneuver is to be performed at a minimum of 500 feet AGL with good forced landing areas in the event of an emergency.<br>B. All bleed air and de-ice switches off. Set altimeter to 29.92 (for PA).<br>C. Using the appropriate chart, PA, FAT (OAT), determine maximum power available and OGE power.<br>D. Smoothly reduce airspeed to 50/60 KIAS and then increase collective until MAX predicted power is reached while increasing airspeed back to cruise speed. This ensures climb is minimized and power readings are as accurate as possible for that PA.<br>E. If MAX predicted power can be reached without exceeding aircraft limitations and/or N2 decay, it can be assumed the aircraft will provide power as predicted on the charts.<br>F. If N2 decay or aircraft limitations are encountered prior to MAX predicted power make appropriate 2408-13 entries and do not use aircraft for mountain operations until released by Maintenance. |
| **NOTES** | Do not exceed any aircraft limitations.<br>Avoid abrupt power reduction upon completion of check. |
| **REFERENCES** | FM 3-04.202 (1-202)<br>Aircrew Training Manual |

| **TASK 3001 -** Perform Go-Around | |
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| **CONDITIONS** | In a mountain environment, VMC, with before landing check complete, aircraft on approach to land. |
| **STANDARDS** | A. Approach planned with escape route.<br>B. Go-around should be initiated before airspeed is reduced below ETL or aircraft descends below obstacles.<br>C. Airspeed and power adjusted for optimum performance.<br>Flight path adjusted for favorable terrain. |
| **DESCRIPTION** | A. If it is determined at any time during the approach that an unsafe condition exists, execute a go-around. A typical condition may include torque indications at or near computed maximum available, left pedal rapidly approaching full deflection, unplanned downdrafts or turbulence and ground speed greater than desired airspeed are all reasons for abandoning the approach.<br>B. Maneuver the aircraft for optimum performance and execute escape route.<br>**WARNING**<br>Under certain conditions, such as high density altitude, high aircraft gross weight, crosswind or downwind approach, etc., loss of tail rotor effectiveness may be encountered as power is increased to initiate the go-around. |
| **NOTES** | Escape routes selected during the high recon may not prove to be practical at execution. |
| **REFERENCES** | FM 3-04.202 (1-202)<br>FM 3-04.203 (1-203)<br>Operator's Manual |

| **TASK 3013 -** Perform Mountain Approach and Landing | |
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| **CONDITIONS** | During flight in mountainous terrain in VMC, with power verification, high reconnaissance, wind evaluation, landing power computed, and before landing check completed. |
| **STANDARDS** | See appropriate ATM for normal, confined and ridgeline approach. Correctly select the appropriate approach for the LZ (i.e. normal VMS, confined, ridgeline, pinnacle, or terrain) and maintain ATM standards for the selected approach. |
| **DESCRIPTION** | See appropriate ATM and Operator's Manual. |
| **NOTES** | 1. When planning a touchdown to the ground, always select a precise point for the touchdown due to the high probability of rocks, slopes, etc.<br>2. Monitor all visual cues inside and outside of cockpit to control rates of descent and closure as well as wind characteristics.<br>3. When in doubt land upslope.<br>4. Depending on the difficulty of the approach or flight environment or both, do not combine final approach and low recon.<br>5.It is mandatory to have a viable plan in the event of LTE in any LZ. |
| **REFERENCES** | Operator's Manual<br>ATM<br>FM 3-04.202 (1-202) |

| **TASK 3014 -** Perform Mountain Landing Zone Reconnaissance | |
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| **CONDITIONS** | During mountain flight in VMC, before landing check complete. |
| **STANDARDS** | A. Select correct pattern to best perform recon.<br>B. Select and maintain best altitude and airspeed (+/-10 KIAS).<br>C. Accurately apply Wind/Terrain analysis.<br>D. Select best possible precise landing point.<br>E. Select best possible approach path, take-off path and associated escape routes. |
| **DESCRIPTION** | A. When approaching the LZ, make an overall evaluation of the area for mission suitability. Determine if a take-off can be made prior to making the approach. The reconnaissance consists of a “high” and “low” recon.<br>B. Landing area recon. Several patterns can be used for the high recon (racetrack, circular and figure eight).<br><br>1. Flight altitude should be high enough to ensure safe operations in the event of up and down drafts. Consider wind speed and terrain when selecting an altitude.<br>2. Airspeed should be suited to terrain and aircraft limitations (minimum rate of descent to VNE).<br>3. Flight patterns should be close to the LZ at angles of bank less than 30 degrees.<br><br>C. The following should be determined on the landing area recon:<br><br>1. Assess LZ size, suitability, shape, slope surface, debris, shadows, and batteries.<br>2. Assess wind direction, speed, characteristics of wind flow and location of demarcation lines. Wind/terrain analysis is critical at this juncture and may be the only method for determining wind direction and velocity at the precise point of landing. See Task 3009.<br>3. Determine approach path, take-off path. Consider wind direction and speed, up and down drafts, terrain, obstacles and escape routes.<br>4. Assess escape routes. Establish several escape routes where altitude can be exchanged for airspeed. Plan for loss of tail rotor effectiveness.<br><br>D. Low Recon. The low recon should not be conducted on the final approach but as a separate maneuver. The low recon confirms the landing area recon to include any judgments made about wind direction, velocity, location or turbulence, downdrafts, approach, take-off and escape routes.<br><br>1. Wind confirmation checks should be flown as close as possible to and/or over the LZ.<br>Wind observations away from the LZ should be considered only as a piece of the wind/terrain analysis puzzle and not taken as definitive of the winds at your precise touchdown location. |
| **NOTES** | NONE |
| **REFERENCES** | ATM<br>FM 3-04.202 (1-202) |

| **TASK 3014 -** Perform Mountain Landing Zone Reconnaissance | |
|---|---|
| | FM 3-04.203 (1-203) |

| **TASK 3015 -** Perform Wind Draft Circle | |
|---|---|
| **CONDITIONS** | During flight in a mountain environment, VMC, given a map of the area. |
| **STANDARDS** | A. Maintain constant airspeed +/- 10 KIAS<br>B. Maintain constant altitude +/- 100 feet<br>C. Maintain a constant angle of bank |
| **DESCRIPTION** | D. If possible, select touchdown point as your start point.<br>E. Prior to passing over the starting point, note the heading and stabilize the airspeed (50-60 KIAS). Initiate a turn over the point maintaining a constant rate of turn.<br>F. As the aircraft passes around the circle and through the original heading, note your position in relation to the starting point.<br>**CAUTION**<br>Crew members should be prepared for winds other than those anticipated. Plan the approach to the ground, if possible. |
| **NOTES** | 1. The maneuver should be performed at sufficient altitude to determine the prevailing wind direction and velocity in the vicinity of the LZ. Wind/terrain analysis can then be used to determine wind direction and velocity in the LZ itself.<br>2. Airspeed, altitude, and rate of turn should be as constant as possible to accurately evaluate wind. |
| **REFERENCES** | FM 3-04.202 (1-202) |

| **TASK 3016 -** Describe or Perform in a Mountain Environment Emergency Procedures | |
|---|---|
| **CONDITIONS** | In an SFTS or orally, given a specific emergency procedure. |
| **STANDARDS** | Correctly perform/state the appropriate emergency procedure IAW the Operator's Manual, FM 3-04.202 (1-202), or FM 3-04.203 (1-203). |
| **DESCRIPTION** | The pilot will demonstrate a thorough knowledge of:<br><br>A. Conditions conducive to retreating blade stall and corrective action.<br>B. Conditions conducive to settling with power and corrective action.<br>C. Conditions conducive to loss of directional control and corrective action.<br>D. Landing in trees.<br>E. The appropriate action for recovery from downdraft.<br>F. Slope limitations and dynamic rollover characteristics. |
| **NOTES** | This task does not diminish the requirements in appropriate Operator's Manuals to memorize immediate emergency actions but rather places emphasis on actions or procedures that are either more likely to occur, are more critical in nature, or require alternate action due to high altitude environment. Example: UH-1H/V experiencing electrical driven fuel boost pumps; executing the emergency procedure for electrical fire in flight without consideration given to operating pressure altitude may result in an unintentional engine failure. |
| **REFERENCES** | Operator's Manual<br>FM 3-04.202 (1-202)<br>FM 3-04.203 (1-203) |

| **TASK 3017 -** Over Water Operations | |
|---|---|
| **CONDITIONS** | In a cargo/utility/observation/attack helicopter, describe or perform over water operations. |
| **STANDARDS** | Be knowledgeable in:<br><br>A. Care, use, and the wearing of water wings.<br>B. Know the water survival ability level of each crew member.<br>C. Be aware of impaired depth perception.<br>D. Know emergency for ditching, power on/off.<br>E. Complete crew briefings.<br>F. Correctly determine power requirements to complete the mission. |
| **DESCRIPTION** | Comply with requirements above. |
| **NOTES** | NONE |
| **REFERENCES** | FM 3-04.202 (1-202)<br>TC 21-2121 |

| **TASK 3040 -** Mountain/High Altitude Operation | |
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| **CONDITIONS** | As determined by the UT/IP/SP/IE. Should as a minimum be a discussion of, and if practical, simulated or actual conditions and hands on performance by all pilots in unit assigned fixed-wing aircraft. |
| **STANDARDS** | Be familiar with applicable information and correctly describe appropriate actions IAW listed references. |
| **DESCRIPTION** | Planning should be for actual conditions or at a lower altitude with computed requirements to simulate higher terrain/airfields. These computations should be used during actual hands on performance ensuring runway is of adequate length.<br><br>A. Take-off. Complete before takeoff, and lineup check. Apply maximum power. Note the additional runway required and reduced rate of climb after lift-off. At approximately 500 feet AGL continue with a normal climb procedure utilizing reduced performance computations.<br>B. Cruise. Use normal cruise procedures, being aware of the increased possibility of the turbulence level due to uneven terrain.<br>C. Landing. Plan a normal landing being aware of the increase in all of the above factors. If the approach is over a bluff to the touchdown area, a steeper than normal approach might be considered to remain clear of turbulence that could be encountered. |
| **NOTES** | NONE |
| **REFERENCES** | AR 95-1<br>FC 1-218<br>FM 3-04.202 (1-202)<br>FM 3-04.230 (1-230)<br>Operator's Manual<br>FAA Ciculars<br>FAA Video Cassettes |

| **TASK 3041 -** Over Water Operations - Extended | |
|---|---|
| **CONDITIONS** | As determined by the UT/IP/SP/IE, a minimum with hands on discussion of and if practical, simulated or actual conditions with hands on performance by all pilots in unit assigned fixed-wing aircraft. |
| **STANDARDS** | Be familiar with applicable information and correctly describe appropriate actions IAW listed references. |
| **DESCRIPTION** | Planning should be for actual conditions or simulated over water situations. Discussion will be per references listed below emphasizing the emergency procedures contained in Chapter 9 of the Operator's Manual. |
| **NOTES** | NONE |
| **REFERENCES** | AR 95-1<br>AR 95-3<br>FM 3-04.202 (1-202)<br>FM 3-04.230 (1-230)<br>FAA Advisory Circulars<br>FAA Handouts/Videos<br>FARs<br>Operator's Manual |